

No. 840,709.

PATENTED JAN. 8, 1907.

A. PFOSER.  
FLAME FURNACE.  
APPLICATION FILED APR. 7, 1905.

Fig. 1

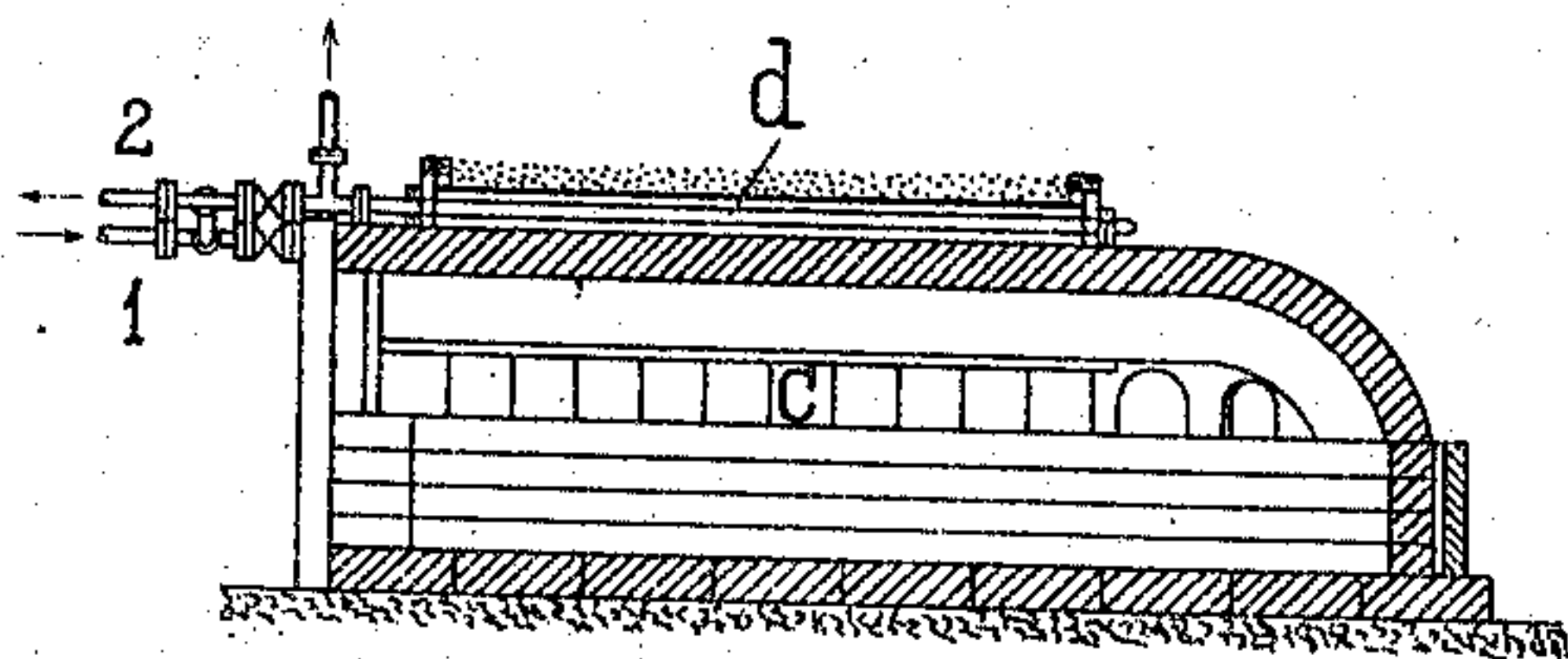


Fig. 3

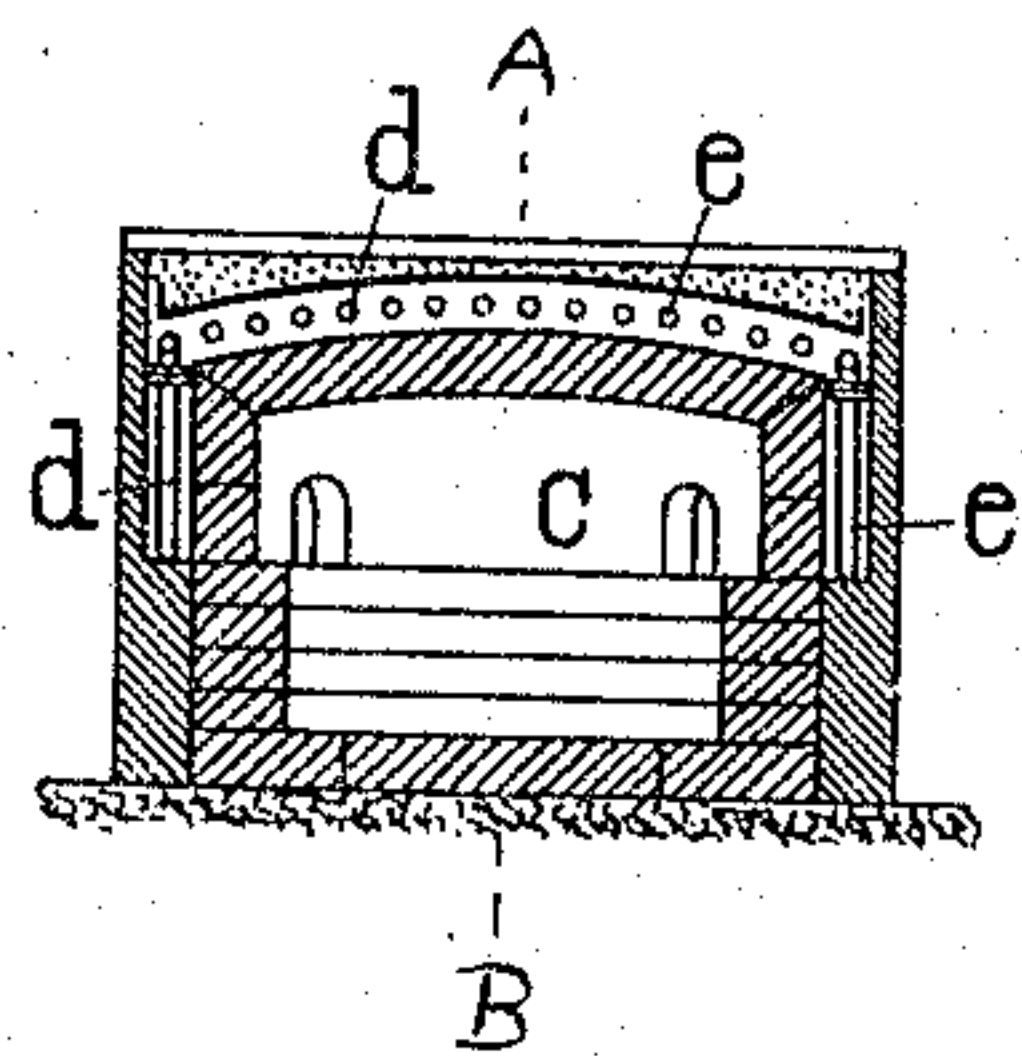


Fig. 2

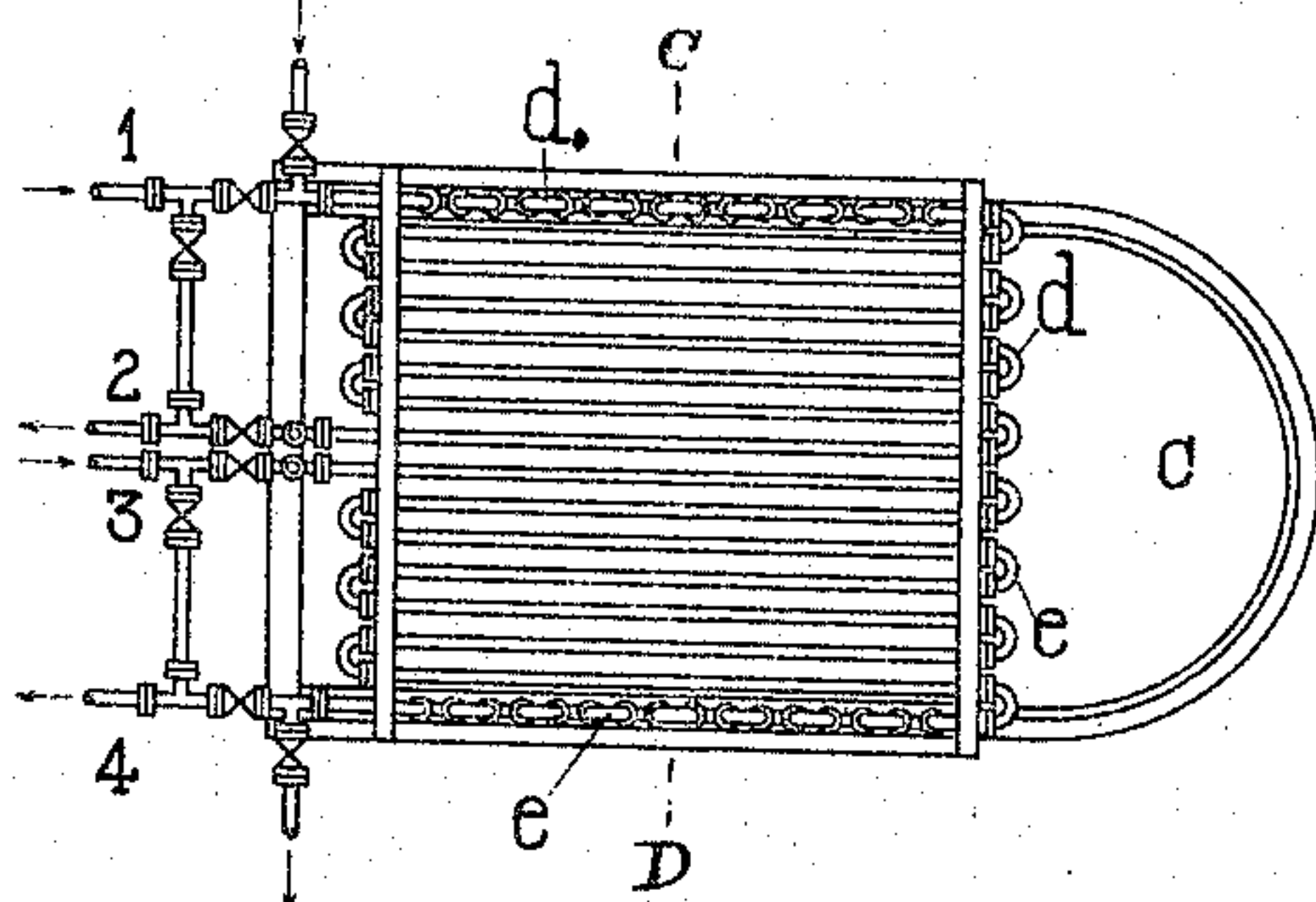
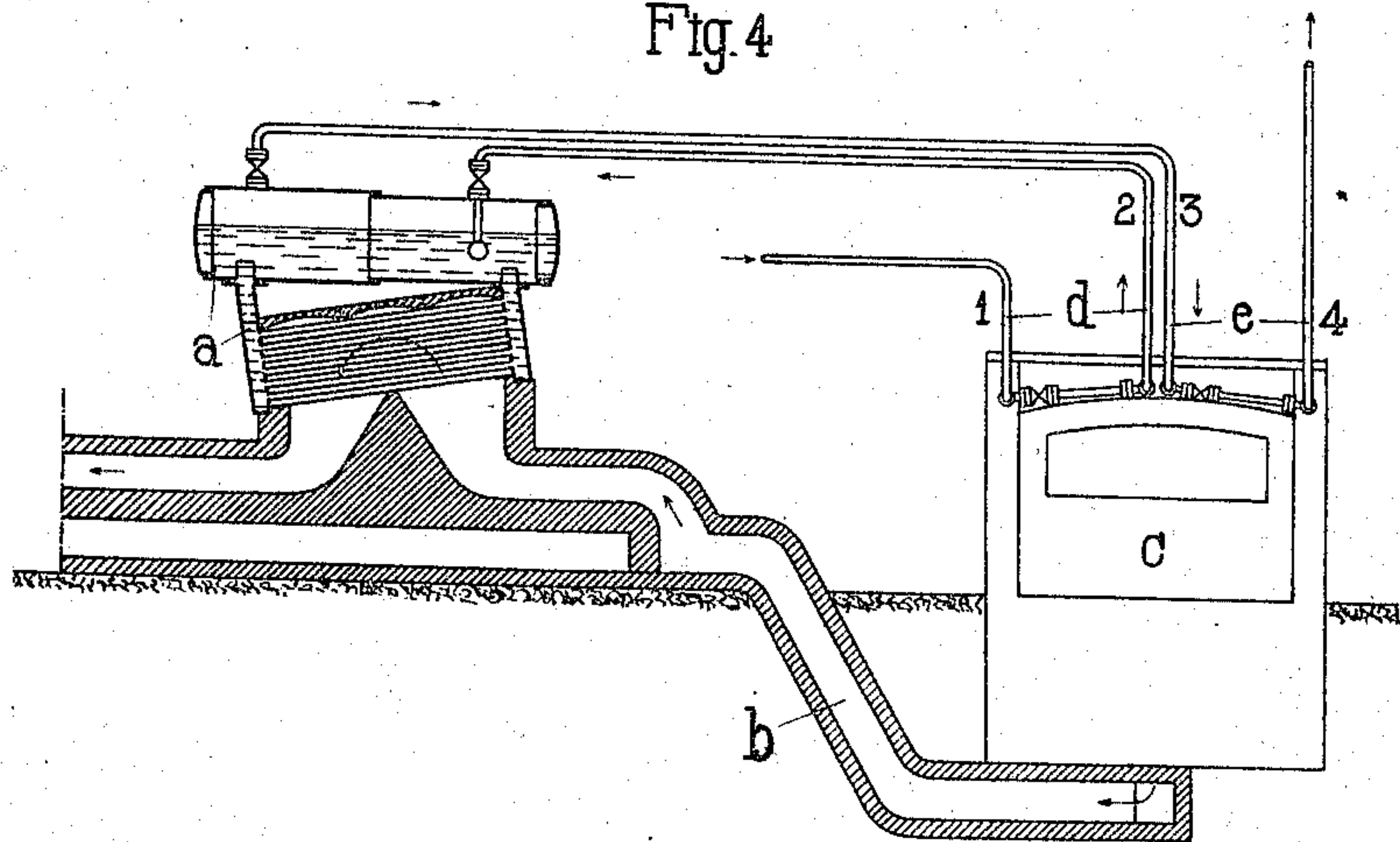


Fig. 4



Witnesses

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# UNITED STATES PATENT OFFICE.

ADOLF PFOSER, OF ACHERN-BADEN, GERMANY.

## FLAME-FURNACE.

No. 840,709.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed April 7, 1906. Serial No. 254,388.

*To all whom it may concern:*

Be it known that I, ADOLF PFOSER, a subject of the German Emperor, residing at Achern-Baden, Germany, have invented certain new and useful Improvements in Flame-Furnaces, of which the following is a specification.

The present invention has reference to improvements in means for making economic use of the products of combustion generated in flame-furnaces, such as are used for drying, baking, fusing, annealing, and the like purposes; and it consists in the construction and arrangement of parts, as hereinafter specifically described, and set forth in the appended claims.

According to this invention I not only use the products of combustion after they have served in the furnace to generate steam, but I also use the heat generated above and around the furnace-vault for the purpose of heating the feed-water and superheating the generated steam. By means of my arrangement it is possible to build in steam-boilers in the smoke-flue of furnaces, the off gases of which contain from three to five per cent. of sulfurous acid, without danger of corrosion of the iron parts, while previously this could only be done in case the gases contained less than one per cent. of such acid. This advantage results from the fact that the feed-heater is not brought into direct contact with the products of combustion. The heated feed-water enters the boiler at a temperature of 212° or over, so that consequently the boiler is cooled only to a small degree by it. As a result, condensation of the sulfurous acid, so dangerous to the boiler material, will not occur, and the life of such boiler will be greatly extended.

The saving in fuel in a flame-furnace built according to my invention over the ordinary type now used is considerable.

In order to make my invention more readily understood, I will now describe it with reference to the accompanying sheet of drawings, in which—

Figure 1 represents a flame-furnace with feed heater and superheater in vertical sectional elevation on the line A B of Fig. 3. Fig. 2 is a plan view. Fig. 3 represents a sec-

tional elevation on line C D of Fig. 2; and Fig. 4, a front view of the flame-furnace in combination with a steam-boiler, partly in section.

The steam-boiler *a* is built into the smoke-flue *b* of the furnace *c*. The pipes *d* of the feed-heater and the pipes *e* of the superheater are arranged at the sides and on top of the furnace-vault, preferably all walled in. Through the conduit 1 the feed-water is conducted to the feed-heater, where it is heated by the furnace heat and carried through conduit 2 to the steam-boiler. After having been converted into steam it then is conducted through conduit 3 to the pipe system *e*, is therein superheated, and finally carried off through conduit 4 to the engine.

The advantages of this arrangement in the matter of saving in fuel and doing away with the corroding action of the gases of combustion will be obvious to any person skilled in the art.

What I claim is—

1. In flame-furnaces, in combination, the furnace proper, feed heating and superheating means in close proximity to said furnace, means inclosing said feed heating and superheating means and adapted to prevent escape of the heat radiating from said furnace, a steam-boiler arranged in the smoke-flue of said furnace, and means connecting said feed heating and superheating means with said boiler, all substantially as and for the purpose set forth.

2. In flame-furnaces, in combination, the furnace proper, feed heating and superheating means located in the walls of said furnace and entirely surrounded thereby, so as to receive the heat generated in the furnace-vault, a steam-boiler arranged in the smoke-flue of said furnace so as to receive the heat of the products of combustion, and means connecting said feed heating and superheating means with said boiler, as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ADOLF PFOSER.

Witnesses:

JOSEPH ROHMER,  
GUSTAV SCHWEISS.